

district. During this period, there have been some disturbances of a volcanic nature, as the limestone is cut by dykes of basalt, and of compact trachytes which, however, differ considerably from the purplish rhyolites already mentioned. As there is a possibility of this island having remained above water from a very remote antiquity, the investigation of its flora and fauna will possess a peculiar interest.

XV. "On the Photographic Spectrum of Comet (Wells) I, 1882."

By WILLIAM HUGGINS, D.C.L., LL.D., F.R.S. Received June 15, 1882.

On the evening of Wednesday, May 31, I obtained a photograph of the spectrum of this comet with an exposure of one hour and a quarter. A spectrum of *a Ursæ Majoris* was taken through the other half of the slit, on the plate, for comparison.

The photograph shows a strong continuous spectrum extending from about F to a little beyond H. In this continuous spectrum I am not able to distinguish the Fraunhofer lines. In this comet therefore, at this time, the original light giving a continuous spectrum must have been much stronger relatively to the sunlight reflected than was the case in the comet of last year. It should be stated that the greater faintness of the present comet made it necessary to use a more open slit, which would cause the Fraunhofer lines to be less distinct; but the lines G, H, and K are to be clearly seen in the star's spectrum taken under the same conditions.

Eye observations by several observers on the visible spectrum of the comet had already shown that this comet for the first time since spectrum analysis was applied to the light of these bodies in 1864, gives a spectrum which differs essentially from the hydrocarbon type to which all the comets previously examined spectroscopically (about twenty) belong.

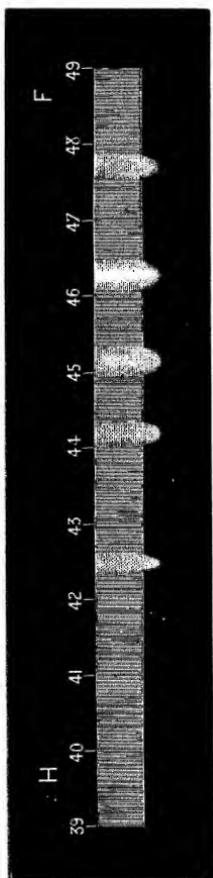
In the visible spectrum bright lines, presumably of the vapour of sodium, and some other bright lines and bright groups of lines have been seen. The hydrocarbon bands in this part of the spectrum have been suspected to be present by some observers.

The photographic spectrum differs greatly from that of the comet of last year.\* I am not able to see the cyanogen group in the ultra-violet beginning at wave-length 3883, nor are the other two groups between G and h and between h and H to be detected.

The continuous spectrum which extends from below F to a little distance beyond H, contains at least five brighter spaces, which are doubtless groups of bright lines, though it is not possible in the pho-

\* "Proc. Roy. Soc.," vol. 33, p. 1.

tograph to resolve them into lines. These places of greater brightness can be traced beyond the border of the continuous spectrum on the side which corresponds to the coma of the comet on the side next the sun. The light from this part of the comet gave a very much fainter continuous spectrum, for on the photographic plate it appears to be almost wholly resolved by the prism into these bright groups. One or two fainter groups are suspected to be present, but they are too indistinct to admit of measurement.



The five stronger bright groups are too faint at the commencement and ending of each group to permit of more than a measurement of the estimated brightest part of each bright space.

The positions of these brightest parts are—

$\lambda$  4769,  
 $\lambda$  4634,  
 $\lambda$  4507,  
 $\lambda$  4412,  
 $\lambda$  4253.

Professor A. Herschel and Dr. von Konkoly pointed out long ago that the spectra of periodic meteors belonging to different swarms differ from each other, and the meteorites which come down to us differ greatly in their chemical constitution. It is not surprising to find the matter of the nucleus of this comet to exhibit a chemical difference from that of other comets.

In the diagram, the width of the continuous spectrum corresponds to the diameter of the nucleus. The bright bands extend into the coma on the side next the sun.

XVI. "On the Action of Heat upon the Contagium in the two forms of Septichæmia known respectively as 'Davaine's' and 'Pasteur's.'" By G. F. DOWDESWELL, M.A. (Cantab.), F.L.S., F.C.S., &c. Communicated by J. BURDON SANDERSON, M.D., LL.D., F.R.S., &c. Received June 15, 1882.

Professor Rosenberger, of Würzburg, has recently published the results of experiments,\* by which he claims to have effectually sterilised by heat, the blood and exudation fluids of the rabbit in the two forms of septichæmia, known as those of Davaine and Pasteur; and he states that these fluids so sterilised, upon injection into other animals, were found to be infective, reproducing the disease with the recurrence of the specific organisms which characterise it: he therefore regards these organisms as having no causal connexion with the affections in which they are found, but as merely secondary or epiphenomenal. That this would be the necessary deduction from the experiments mentioned, if it were proved that the fluids had been effectively sterilised, is obvious; but the account published contains no details whatever of the methods employed, nor protocol of the experiments, so that it is impossible either to discuss them or to form a judgment as to the correctness of the conclusions. They, however, involve a question so important in respect to the theory of contagium vivum—the relations of these micro-organisms to disease—that it was determined to work out the subject on the basis indicated in Professor Rosenberger's paper, adopting such methods and precautions as appeared necessary.

\* "Centralb. f. d. Med. Wiss.," 1882, No. 4, pp. 65-69.

